

virtually every man is his own doctor. The communication network is so much simpler on Yap that it is proportionately harder to disrupt.

Finally, let me return to the point with which I opened: what are the implications of a *chronic threat*? I would make this suggestion. Where there is a chronic threat, that threat will take on meaning far above and beyond its own real and inherent nature. The event which is threatened will have meaning in terms of causes, and all human beings are vain enough to see these causes in themselves. The unique catastrophe is very different: it is unstructured and by the time it is structured it is finished and does not occur again. But the chronic threat, the catastrophe that is long-awaited, takes on distinct meanings and provides a focus for long-standing anxieties, guilts, fears, and hostilities. One important part of the structuring of meaning is the extent to which it becomes common for the whole population. The unique catastrophe is responded to in terms of the socially structured motives of individuals. The chronic threat takes on common meanings for a wide population.

If we look forward to and plan for the thermonuclear disaster and if we look forward to it and plan for it over a

sufficient time, we must take into account in our plans more than the bare physical effects of that disaster, for by that time people will not only respond to the thermonuclear detonation itself, but they will also be responding to all the things they have projected into it and built into it in terms of their primary concerns and their primary anxieties. Indeed, their response to the physical detonation and its physical effects will be largely shaped by the meanings they impute to those physical phenomena, and not simply to the physical phenomena themselves.

I cannot say at this moment what primary concerns and anxieties Americans will manifest and thereby determine their response to a thermonuclear blast. Nor can I say just what meaning they have already given such a potential event. But I would suggest that, if the Yap data provide a valid base for generalization, it would be reasonable to expect these anxieties and concerns to follow closely the meaning they impute to such a disaster, and that the response to the disaster will be composed of the response to those meanings as well as to the actual, physical explosion; just as the disturbance of social relations is as much a part of a Yap typhoon as the wind, the rain and the water.

IV

Some Functions of Communication in Crisis Behavior

*Harry B. Williams**

We may conceive of crisis—for our purposes here—as a situation in which the actor faces the necessity of making an appropriate choice of action in order to avoid or minimize severe punishment. In this context, the function of communication is to enable the actor to make choices by providing him with information.¹ He has received information

when his perception of the number or the relative value of available choices is changed.

Our analysis of communication functions in crisis is based upon the cybernetics concept of communication. When the actor has made a choice he seeks or receives further information about the results of the choice and compares it with the desired outcome. We may call these parts of the process “feedback” and “comparison” respectively. The information which he possesses about the desired outcome and against which he compares the feedback messages about results we may call “reference messages” or “reference inputs.” This comprises the area of pre-existing information and predisposition—including values, attitudes, set, motivation, etc.—which is so important in determining the responses of human behavioral systems and in the investigation of which other theoretical frameworks may be required. After comparison of feedback and reference messages he may modify his choices or make new choices to achieve results more consonant with desired outcomes.

A classic and very simple example of this circular communication system—sometimes called a “servo system,” sometimes a “feedback control” system²—is the familiar home furnace. In the home furnace system, the thermostat compares actual room temperatures with the desired temperature fixed by the user. Finding error, it signals the furnace to turn on,

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1. This paper was prepared for oral presentation and discussion in a panel discussion and has not been rewritten for publication. Obviously, it does not contain the many qualifications and elaborations which would be made in a longer and more formal publication. Three general qualifications should be expressed here: 1) The title refers to behavior in “crisis,” but the hypotheses and examples are drawn from only one kind of crisis, sudden community disaster. It was the writer's hope that some of these points would be found to have applicability to a broader range of crisis events, but no attempt is made to establish this relationship in this paper. 2) Many of the points concern mismanagement or ineffective crisis behavior. By seeing what went wrong in a system, we are enabled to learn more about its general functions and behavior as a system. The reader should not be left with the impression, however, that these examples of malfunction represent a norm or majority of behaviors in disaster. For a proper corrective to any such impression, the reader is referred to Charles E. Fritz and Eli S. Marks, “The NORC Studies of Human Behavior in Disaster,” *The Journal of Social Issues*, Vol. X, No. 3 (1954), pp. 26-41; and Charles E. Fritz and Harry B. Williams, “The Human Being in Disaster: A Research Perspective,” *The Annals of the American Academy of Political and Social Science*, 309, January 1957, pp. 42-51. 3) The hypotheses and discussions attempt to account for selected behaviors, and for only certain aspects of these. They have no implication of theoretical exhaustiveness or of statistical normality.

2. For a good exposition see, the Editors of *Scientific American* (eds.), *Automatic Control*. New York: Simon and Schuster, 1955.

or off; then it continues to compare actual against desired results, and so on, around the circle. A properly functioning feedback control system is thus a self-correcting system. We assume that this model describes much of the communications behavior of individuals, as well as social systems.³

We will examine behavior in one type of crisis—sudden community disaster—using the feedback control system model and speculating quite freely, in the hope of generating some insights on the subject. Full examination of human behavior in disaster requires other points of views and models.

The general function of communication in crisis is to provide the actor with information which will enable him to make choices to avoid, minimize, or remedy the consequences of the crisis. This implies information about:

- 1) the probability and characteristics of future crisis;
- 2) the fact that crisis is at hand;
- 3) the alternatives for action during the crisis;
- 4) what has happened as a result of crisis;
- 5) why the crisis occurred.

It is not possible here to examine each of these functions systematically; instead, let us advance a series of rough working hypotheses which are pertinent to the several functions and which are suggested by disaster research.

1) Information about a future possible threat, which has not been previously experienced, tends to have relatively low value.

Disaster research and common experience indicate that individuals and communities are frequently caught unprepared for disaster which could have been anticipated. Civil defense agencies struggle constantly against the barrier of so-called "public apathy."

From the communication point of view we can see that while threat is in the future, abstract, and not certain, preparatory actions are in competition with other current choices, most of which have the important advantage of relatively immediate feedback and potential rewards. Warning information is coexistent with and in competition with all the normal input of information to the actor. How does an actor choose, in competition with other alternatives, an alternative for which he has not already experienced feedback or reinforcement, for which he cannot be sure of rewards, and from which he receives no feedback by which to evaluate the action in terms of its primary purpose?

The perceived authority of the source of warning seems to be one variable which influences the extent to which warning will be heeded. Authority of source may be able to function as a substitute for the missing feedback, i.e., the actor takes the word of somebody else in whom he believes, a kind of vicarious feedback. As parents, we are attempting to provide this sort of feedback when we try to get the child to take our word for it that the hot stove will hurt.

Contradictory or ambiguous warnings—particularly if they are from sources of relatively equal authority—leave the field of action open for the actor; they do not change

his range of possible choices; they are poor competitors. Note this exaggerated example of low-value warning information: A loudspeaker car—commandeered from a local theater—cruised the streets of a flood-threatened city, repeating the following message: "An all-time record flood is going to inundate the city. You must evacuate immediately. [pause] The Theatre is presenting two exciting features tonight. Be sure to see these pictures at the Theatre tonight."

If the actor chooses preparatory actions from among the other competing choices which offer immediate rewards, we may assume that two good reasons are: 1) He has had previous experience with the threatening situation or one analogous to it, and therefore knows the potential punishments; or 2) he has high confidence in the source which is providing the warning information.

He may take someone else's word for it because previous experience has shown that source to be an accurate predictor, or because one of his instrumental goals is to please or obey that source by following its suggestions. Also, the actor may operate within a system which has as a system goal preparation for future crisis, but which offers immediate and personal rewards for actions which are appropriate to the system goals. The various non-combat rewards available to soldiers in peacetime would be an example. These considerations strongly suggest that when applied to human behavior, the feedback control model must include feedback loops which are based upon substitute or intermediate sources of feedback and reinforcement. Hence, analysis of the structures of behavioral systems is necessary in order fully to understand their communication processes, just as analysis of their communication processes helps us to understand changes in structure.

2) Recognition of the existence of crisis tends to follow an emergent or non-linear pattern.

In sudden disasters, at least, recognition of the existence of crisis often lags behind the occurrence of immediate threat or even behind the impact of disaster itself. Individuals will often persist in interpreting tornado cues as "bad storm," the "roaring of a train," or other familiar cues even as the tornado rushes upon them. Community communication centers are often not aware that serious disaster has occurred for some time after impact. Examination of the message records of some of these centers shows a series of fragmentary and local reports leading up to and following actual impact. Only when these incomplete reports cumulate to a certain point, apparently, does a *Gestalt* perception emerge that something abnormal has occurred.

This phenomenon can be examined in various ways. One of the most practical questions, for example, is how can a given geographic area, at a price it can afford, operate a reporting system which will reduce lag in recognition of crisis. Let us point briefly, however, to an implication concerning the value of information. The sight of a funnel-shaped cloud will usually be interpreted immediately as a sign of tornado, whereas other cues—such as roaring wind, dark skies, hail—are not so readily interpreted. The vortex or funnel-shaped cloud is a unique symbol; it means only

3. Does Dr. Schneider's article in this issue of *Human Organization* describe self-correcting mechanisms in the Yap culture?

tornado, and it is the only one of the readily perceived cues in a tornado which is not associated with other situations.

This points to the value of a unique symbol associated with a specific threat—as any of us knows who cannot clearly distinguish his local air raid alarm from a fire siren. In the 1953 Netherlands flood, church bells were rung to warn the people. This is an ancient distress signal, but it can mean a variety of things. Thus some of the Dutch interpreted the bells as a fire signal, scanned the horizon for flames, and finding none, went back to bed—only to have the flood waters pour in on them a little later.

Let us also consider, briefly, this point: If a system reacted to each cue which *could* signal a radical crisis as if it *were* such a crisis—if, for example, a police department treated all emergency reports as disasters, instead of as routine emergencies—the system could quite conceivably destroy itself. It would be too sensitive, at the cost of stability. Thus we may see in crisis the functioning of a conservative—“let’s think it over first,” “don’t go off half-cocked”—predisposition in human systems which is a built-in homeostatic mechanism.

3) Information about survival choices is a major determinant of survival behavior.

Given a situation of immediate, severe danger, the individual’s goal is to survive and, in many cases, to help others to survive. He may flee, seek cover, or fight against the destructive agent. Clearly, he requires information about which of these choices have the highest survival value. It is not surprising that much behavior during the immediate threat and the onset of disaster impact is essentially a search for information. Thus certain behavior, such as milling about and talking, may seem stupid to the outside observer who possesses more information, but it may be very important to the endangered people. Obviously the relationship between time required to define the situation and time available for completing survival actions is critical.

Irrational or non-goal directed responses—which we find to be in the minority—are also partially a function of information received or possessed. Thus, mass panic—a relatively rare phenomenon—occurs under conditions wherein the actor perceives an increasing, severe threat and a decreasing, but still possible route of escape. In the jammed-exit situation, people in the rear of the mass lack front-to-rear communication by which they can accurately evaluate the condition of the escape route and will thus press toward a jammed exit *as if* it were freely open.⁴ There is some evidence to indicate that when the situation is defined as inescapable, resignation rather than panic tends to occur.

There is also some evidence which suggests that the possession of information about the danger situation, even when the actor can do nothing about it, is itself positively correlated with calm behavior. Group interaction is also a variable associated with the occurrence of calm and effective survival action. During the time of warning, and even during a brief and hectic period of threat, people will discuss the situation,

shout instructions, and so on. In effect, informal communication nets for transmitting and interpreting information about the changing environment often emerge, centered about individuals of presumed superior knowledge or influence. We will not speculate on these findings except to point out that the presence of others obviously multiplies the opportunity for feedback and may actually supply more information. The actor can modify his definition of the situation or gain reassurance in the correctness of his own definition. He may also gain reinforcement for behavior which, from the outside observer’s point of view, is not calm and effective.

Quarantelli has pointed out how a crowd of people may, through verbal communication, progressively define a situation as more and more perilous until it leads to “emergent panic.”⁵ In the terms of our model, this is a vivid demonstration of the feedback process in social interaction (in this example, so-called “positive feedback,” because it continues to increase the “error” in the system).

4) Compelling pressure to act and a compressed time perspective lead to error.

Although outsiders may exaggerate its extent, there is usually some degree of confusion and disorganization in disaster rescue efforts. This can be seen clearly—if not measured—in the logistical system. Supplies seem to arrive in waves, often unrequested, like manna from heaven, as Rosow puts it.⁶ Because supply substantially exceeds need in peacetime disasters, this system usually works. In a wartime attack, where needs would exceed supply, such a crude system would be entirely inadequate.

Needed coordination of decisions and activities is often conspicuously absent. In short, errors are made more frequently than under normal conditions.

Inadequacy and overload of physical communication facilities and noisy communication channels contribute to the difficulties. Another factor also contributes. In a servo system, rapidity, sensitivity, and stability of response are reciprocally related. One result of a sharp increase in rate of response can be a decrease in the system’s sensitivity. There is an increase in the probability of errors.

We know that in the early stages of disaster, rescuers, helpers, and officials feel a great urgency to act—to *do* something. The time perspective tends to be compressed⁷—things must be done as quickly as possible. Here, then, is one source of error in crisis behavior. Discrimination and consistency in decision tend to be sacrificed to rapidity and high rate of response.

Needless to say, various factors—including knowledge, experience and training—will modify such a tendency. This qualification applies to many statements made in this paper and will remain tacit hereafter.

4. Committee on Disaster Studies, *The Problem of Panic*, Federal Civil Defense Administration, Technical Bulletin, No. TB-19-2. Washington: U.S. Government Printing Office, June 1955.

5. Enrico L. Quarantelli, *Abstract of “A Study of Panic: Its Nature, Types, and Conditions.”* (Unpublished Master’s Thesis, Sociology Department, University of Chicago.) Chicago: National Opinion Research Center, 1953 (mimeographed), p. 11f.

6. Irving Rosow, *Authority in Natural Disasters* (to be published by the Committee on Disaster Studies, National Academy of Sciences—National Research Council).

7. See Harry B. Williams and Jeannette F. Rayner, “Emergency Medical Services in Disaster,” *Medical Annals of the District of Columbia*, XXV, December 1956, p. 661.

5) Sudden crisis creates great disparity between input from the environment and reference input, cutting down output.

This applies especially to individuals who have been in the impact area—the victims. These people are frequently described as being in a state of shock, stun, or daze. Here, rather than increase of output, there is decrease; the system seems to have stabilized at a much simpler level. This is sometimes attributed to communication overload which results in jamming the internal circuits and a resultant decrease in output. Rather than accepting this phenomenon as strictly a matter of quantitative overload, I suggest we also consider the enormous disparity between the input signals which the actor receives from his broken, disorganized environment and the reference information in terms of which he normally evaluates signals from his environment—he has no frame of reference in terms of which he can readily define this radically different situation.⁸ In our present terminology, he lacks a code by which to decode the new signals from his environment. Thus the sight of destruction all about is sometimes interpreted as meaning “the end of the world” or “atomic bomb.” Furthermore, he is unable (relatively) to generate feedback signals from his environment by manipulation of his own output. The disparity is reinforced and the inability to define the situation and to make choices increases. As his communication with environment breaks down, the actor’s sense of control over environment, and therefore, his sense of potency may be diminished.

Possibly most people experience, in sudden crisis, a momentary freezing or paralysis of clear thought and action. This is a brief time during which internal and external feedback are radically out of phase. In some cases, the system apparently is not able to regain its ability to function and behavior appears to be random or automaton-like. In other cases, the system quickly regains its ability to function—the human being apparently is rather remarkable in his ability to make such radical adjustments. The relative proportions of people who react in these ways is unknown and the evidence appears to be contradictory.⁹ Answering this important question requires that it be cast so as to account for both the internal and external communication behavior of the actor. A person narrowly fixed upon a limited compelling purpose—such as finding his wife or child—and not communicating with other people is neither in a state of complete shock, nor operating in his normal input and output range.

A major communication need in crisis is to establish the status of loved objects. This applies especially to loved per-

sons. Anxiety over loved ones is a dominant and entirely predictable response in disaster. Much activity will be devoted to searching for loved ones and seeking information about their welfare. It is interesting, in terms of our model, that indirect confirmation of the safety of loved ones often will not suffice. The actor goes to see for himself, apparently requiring for belief the confirmation which is provided by face-to-face feedback. This suggests the hypothesis that the degree of threatened loss which is perceived is positively correlated with the tendency to seek pertinent information by direct perception.

6) The sector of life subject to reference input through institutionalized channels and sources is radically reduced.

For normal life activity, culture has provided the actor with a body of information against which he can evaluate inputs from his environment and make comparisons by which to decide upon his next outputs. Institutionalization enables him to have a working body of information to deal with the infinite variety of inputs from the environment. It reduces the number of information sources and channels he must heed, and it reduces the number of problems he must solve, by placing them in classes of problems. The area of life which is made more manageable in this way is radically reduced for most people in sudden disaster.

This has numerous implications, many of them obvious. Clearly this is an area in which sociologists and anthropologists can make a great contribution to understanding social communication processes. We can exploit only two implications here.

After the situation has been defined as abnormal in a community communication system, the system has a new input, the symbol “disaster!” This becomes the new reference input for evaluation of new messages and substitutes for the normal body of reference information which has now become largely inapplicable. It often evokes signal responses. In our culture, however, certain simple reference messages about disaster seem to be widely possessed—such as, “we will need all the doctors and nurses available,” “we will need all the blood we can get.” This usually is not true and the resulting over-commitment of resources can start the disaster system off with a large error and an oscillation may be set up which is difficult to bring under control. Inadequate communication often means that a large error (e.g., a troublesome concentration of unneeded volunteers) is required before the error is recognized and an error message (e.g., stay away from the disaster area) is sent. This nurtures “wave supply.”

Also, we find a strong tendency to try the familiar response. Ambulance drivers took their vehicle some 30 miles to one disaster, picked up a load of victims, and took them 30 miles back to a hospital in their own community. These problems are overcome, however, often with admirable ingenuity and initiative, and in some cases quite rapidly. As they are overcome and recovery proceeds, other values and needs can be considered. The system begins to respond to a much wider range of inputs. This is the reassertion of system goals, cultural value systems, and social structure which are relatively inappropriate or submerged in the immediate crisis.¹⁰ The

8. Cf. Anthony F. C. Wallace in this issue of *Human Organization*; also his *Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation*, Committee on Disaster Studies, Disaster Study No. 3. Washington: National Academy of Sciences—National Research Council, Pub. 392, 1956, pp. 109ff.

9. It is clear, however, that substantial proportions of people soon possess enough equilibrium to engage in useful rescue and welfare tasks, undermining the common stereotype of disaster-struck populations as a dazed, helpless mass. We would estimate, conservatively, that in the usual peacetime disaster in an American community at least 50 percent of the initial rescue work is accomplished by victims and volunteer helpers from nearby areas. See Fritz and Williams, *op. cit.*, pp. 44-46.

10. See Fritz and Williams, *op. cit.*, pp. 48-50.

sector of life subject to institutionalized reference information increases again. Thus, a merchant may have evaluated his inventory against human life and freely given away goods from his store. As the crisis to life passes, however, he re-evaluates in terms of normal values—and vigorously demands that somebody pay him for all the flashlights and raincoats he gave away.

In addition to the rich possibilities this phenomenon provides for the study of latent aspects of value systems and social structures, it offers an insight into the functioning of communication systems. One way a feedback control system can react more rapidly is to cut down the signal range. Both individuals and community systems revert, in sudden disaster, to a restricted set of referents centered around the saving of life and other primitive creature needs. As the crisis to life and the felt need for rapid response decrease, a wider signal range—and therefore pre-disaster values—can once again be considered. We would expect to find that increasing organization of the rescue and relief effort is accompanied by an increasing reference to values outside the objective crisis situation—such as which agency has the right to do what for the victims. We do indeed find such an increase, but much more research is required before the explanation just advanced has more than descriptive value.¹¹

7) There is great need for assistance in the communication and decision making processes.

The ready response of people to authoritative figures and the rise of emergent leaders have been repeatedly observed in disaster during the emergency period. These phenomena have several facets. From the communication point of view,

11. The promise of this and similar general systems models for problems of this sort will be realized, or tested, when such factors as the flow of information can be measured in actual social situation.

we can see how a leader substitutes for missing or weak links in the process of communication with the environment—the leader can provide feedback, informing the actor he is doing the right thing or the wrong thing; he can supply part of the missing reference input, providing information to help the actor understand and evaluate information from the environment and he can serve the comparer function to some extent, telling the actor what to do when the actor cannot decide for himself. No wonder, then, that leadership is so important in crisis. No wonder, either, that outside agencies are sometimes able to accelerate the reorganization of forces in disaster-stricken communities.

8) Crisis events need to be interpreted and re-integrated with the actor's value system.

There is much talk in disaster-stricken communities about “why it happened.” It seems to be important to people to find an answer which can be accommodated in their value systems. In a highly religious sub-culture this provokes much theological discussion—how could God let this happen? Ministers have been observed going around to their membership, helping the people to interpret the event in a way consistent with their theology.

The prevalence of these interpretive efforts and their apparent importance to people suggest that it is important to the actor to re-establish his body of reference information as an integrated body—not just piece by piece as new problems arise. Crises may show us that people depend upon an interrelated, consistent body of knowledge and values more than we realize in normal times. But this will be more true of some individuals than others, and more true of members of one sub-culture than another, which suggests that study of crisis behavior is an entre to basic research on value systems and their functions.